THE CONTRIBUTION OF LEADERSHIP ATTRIBUTES TO LARGE SCALE, COMPLEX PROJECT SUCCESS

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ABSTRACT

Mismanagement of large-scale, complex projects has resulted in spectacular failures, cost overruns, time blowouts, and stakeholder dissatisfaction. We focus discussion on the interaction of key management and leadership attributes which facilitate leaders' adaptive behaviors. These behaviors should in turn influence adaptive team member behavior, stakeholder engagement and successful project outcomes, outputs and impacts. An understanding of this type of management will benefit from a perspective based in managerial and organizational cognition. The research question we explore is whether successful leaders of large-scale complex projects have an internal process leading to a display of administrative, adaptive, and enabling behaviors that foster adaptive processes and enabling behaviors within their teams and with external stakeholders. At the core of the model we propose interactions of key attributes, namely

cognitive flexibility, affect, and emotional intelligence. The result of these cognitive-affective attribute interactions is leadership leading to enhanced likelihood of complex project success.

Keywords: Cognitive flexibility, affect, emotional intelligence, complexity

Overview of the Research

We argue that the individuals within a system need to have qualities that facilitate outcomes. A system is made up of many individuals in tension with one another, but the difference between systems that are maladaptive (as opposed to enabling) depends on both the collective organizational mindset and the mindset of the individuals within it that foster adaptation. The research question we explore is whether successful leaders of large-scale complex projects have an internal process leading to a display of administrative, adaptive, and enabling behaviors that will foster adaptive processes and enabling behaviors within their teams and with external stakeholders. At the core of the model we propose interactions of key attributes, namely cognitive flexibility, systemic thinking, affect, and emotional intelligence. The result of these cognitive-affective attribute interactions is leadership leading to enhanced likelihood of complex project success.

Uhl-Bien and Marion (2009) propose that adaptive leaders will be adept at recognizing and engaging with the complex interactive dynamic as they emerge; and that adaptive leadership should therefore produce a rich flow of information to stimulate and to enhance the effectiveness of leadership in a dynamically complex situation. According to these authors, people practicing adaptive leadership will engage in non-linear thinking and dialogue. As a consequence, such leaders should understand the consequences of their actions thereby fostering the emergence of additional enabling individuals and collectives within the system.

These adaptive competencies are the qualities that may affect the ability of leaders to behave in ways that facilitate the creation of adaptive dynamics to facilitate positive project outcomes. This suggests that leaders of successful complex projects operate within an environment of rich interconnectedness and dynamic interactions, ripe for the emergence of complex adaptive systems and process qualities similar to those hypothesized by Uhl-Bien & Marion (2009).

Whitty and Schulz (2007) contend that traditional project managers oversimplify the processes involved in managing people and this oversimplification leads to project failure. A leader's ability to cope with complexity and not to look for reductionist strategies should therefore aid project success and the emergence of adaptive systems.

Structurally, large and complex projects are typically performed by nested sub-project teams (see Figure 1). Project leaders coordinate and integrate team level outputs and negotiate with external stakeholders to clarify project goals and create the project level deliverables. Organizational structure and processes can support or hinder the smooth integration at various levels. This aggregation illustrated in Figure 1 is often repeated multiple times throughout the life of a large and complex project as the project constructs building blocks to be integrated for the final deliverable. The dynamic and evolving nature of these projects reflect characteristics of a complex adaptive system. Complex Adaptive Systems (CAS) has been likened by Uhl-Bien and Marion (2009: 631) to a "neural-like network of interacting, interdependent agents who are bonded in a collective dynamic by common need".

Figure 1: The structural arrangement of a large complex project

Thus, we posit that projects can be conceptualized in terms of a set of evolving complex patterns of interactions among project leaders, team leaders, team members, and stake holders. This then highlights the complex and multilevel nature of leadership in this context, suggesting that there might be a large array of factors to examine at each level of integration. Complexity leadership theory has thus been developed to examine the *gestalt* impact of collective leaderships with stronger emphasis on the evolving structures and processes (Uhl-Bien & Marion, 2007). In the model we develop, however, we focus specifically on contributions of individual attributes and behaviors to project success within a multilevel milieu of large-scale, complex projects.

Researchers who have studied individual effects on project management outcomes (e.g., see Müller & Turner, 2010) have in general found that leaders' and team members' characteristics and abilities influence their behavior. We therefore begin our model-building with a discussion of how these characteristics or leadership qualities influence behavior leading

to the development of adaptive or maladaptive systems. Figure 2 illustrates how individual attributes affect their behaviours which in term influence process success factors, outputs, and eventually outcomes and impact. At the project level, we propose that project leader's cognitive flexibility; affect, and emotional intelligence (see discussion below for definition and detailed discussion) determine a project leader's adaptive and maladaptive behaviors that, in turn, create adaptive or maladaptive structures and processes at the project level. Ultimately, it is these structures and processes that determine project outputs, outcomes and impact (see Figure 2, Row 1).

Figure 2: Individual-level effects on team and project level success

In Figure 1, project teams are seen to comprise of multiple sub-project teams. This notion of loosely coupled sub-project teams in either a network arrangement (Uhl-Bien & Marion, 2009) or parallel function teams (Mathieu, Marks, & Zaccaro, 2001) implies that the proposed relationship between individual attributes, behaviours, success factors (systems and processes) and outputs, outcomes, and impact maybe be observed for each sub-project team as well (Figure 2, Rows 2 and 3). Furthermore, project leaders interact with team leaders in a similar fashion as team leaders interact with team members, thus demonstrating the importance of fractal patterns in CAS.

Spiro and Jehng (1990) defined cognitive flexibility as the capacity of an individual to demonstrate open-mindedness, adaptability, tolerance of ambiguity, and uncertainty; and to resist premature closure and cognition. In an organizational settings, Reiter-Palmon (2003) and Kropp, Zolin, & Lindsay (2007) found that capacity for cognitive flexibility enhances a leader's or manager's ability for effective decision making, opportunity recognition, understanding complex systems and processes, critical thinking, and cultural sensitivity. Cognitive flexibility offers leaders the inclination to adapt to new and unexpected patterns. This applies to problem solving for team members, as well as problem solving and development of adaptive structure and systems for team and project leaders at the corresponding level. This then leads to our first propositions:

Proposition 1: Individual cognitive flexibility will enhance project success.

Proposition 1a: For project leaders and members, cognitive flexibility leads to adaptive behaviours which in turn contribute to project success factors, thus influencing project outputs, outcomes and impact.

Proposition 1b: For project and team leaders, cognitive flexibility leads to development of adaptive structures and process at the corresponding level, which in turn enhance project success.

A recurring theme in the research we outlined above is the role of affect. In this respect, as Forgas (1995) notes moods serve to "infuse" cognitive processes. Another contemporary theory of affect, especially applicable to organization contexts is affective events theory (AET: Weiss & Cropanzano, 1996; see also Weiss & Beal, 2005). According to Weiss and Cropanzano, events in the organizational environment trigger "affective events" that subsequently determine organizational members' attitudes and behaviors. Moreover, there is evidence that moods interact with cognitive flexibility. Hirt, Devers, and McCrea (2008), for example, showed that a positive mood or affect can enhance cognitive flexibility. Baumann and Kuhl (2005) found visual cognitive flexibility was enhanced by positive affect and reduced by negative affect. Complex projects by their very nature exist in a world marked by high stress and uncertainty, ever changing emergent problems and decisions, high need for coordinated effort between many stakeholders (internal and external), dispersed project teams and tight deadlines and schedules. Thus our second proposition is:

Proposition 2. Via a process of affective infusion, cognitive flexibility and its effects (Proposition 1) are enhanced by positive affect, and reduced by negative affect.

On the basis of research showing that affect plays an important role, we further argue that emotional intelligence should play a role. By emotional intelligence, we refer to the original construct defined by Mayer and Salovey (2004). This idea is consistent with research (e.g. Leonard & Harvey, 2007; Lenaghan, Buda & Eisner, 2007; Mavroveli, Petrides, Rieffe & Bakker, 2007; Mikolajczak et al, 2007) demonstrating that, compared to others low in emotional intelligence, high emotional intelligence employees have greater cognitive flexibility, lower psychological and biological stress reactivity, greater curiosity, more positive affect, enhanced adaptive coping styles, and psychological wellbeing. Jordan and Troth (2004) found that emotional intelligence enhances individual and team performance and increases job satisfaction and motivation. More recently, Clark (2010) found that emotional intelligence separates the effectiveness of one project leader from another (and may enhance the ability to be cognitively flexible). Thus our next proposition is:

Proposition 3. Cognitive flexibility and its effects (Proposition 1) are likely to be enhanced for individuals high in emotional intelligence, and reduced for those who are low in emotional intelligence.

Figure 2 illustrates how our propositions fit within the context of large-scale, complex project management. The model begins with Proposition 1 that cognitive flexibility is the key to project success (outputs, outcomes, impact) which is measured in terms of specific success factors. Cognitive flexibility is enhanced by positive affect via affect infusion (Proposition 2) and emotional intelligence (Proposition 3). The model is organized in terms of project and team outcomes, reflecting the multi-level nature of large-scale, complex project management.

Challenges

In this paper, we have proposed a multi-level model of the processes underlying leadership in the context of large-scale project management. The area in which we would like to focus discussion is whether complexity leadership theory which has as a basic tenant that leadership emerges from within a system is facilitated by a replication of this process internally within a successful leader. The framework we have proposed is developed from the psychological, management and sociological evidence that shows that certain leader behaviors can facilitate or hinder the performance of individuals, teams and projects, and the external stakeholders or contractors they interact with. The framework builds on published theoretical and empirical work designed to provide a potentially new view of the relationships between complex project leaders' attributes and behaviors, and their multilevel influence on project and team level processes and outcomes. In particular, we posit that the cognitive-affect interaction will ultimately influence multilevel outcomes. At the project and team levels the behaviors demonstrated by leaders with these characteristics will enable the development of perceived satisfaction in terms of time, budget, quality of product or service and relationship and a willingness to either do repeat business (project level) or work with team members again (team level). At the organizational level the enabling behavior demonstrated by leaders and non-leaders should produce a more adaptive bureaucracy. The qualities that enhance adaptive leadership, especially in large-scale complex projects, can save billions of dollars of taxpayers' money, potentially create better quality leaders.

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